2019 national curriculum tests

# Key stage 1

## Mathematics test mark schemes

Paper 1: arithmetic
Paper 2: reasoning

Standards & Testing Agency

# Contents

# 1. Introduction

The Standards and Testing Agency (STA) is responsible for the development and delivery of statutory tests and assessments. STA is an executive agency of the Department for Education.

The 2019 tests assess the national curriculum. This test has been developed to meet the specification set out in the test framework[1] for mathematics at key stage 1.

A new test and new mark schemes will be produced each year.

The key stage 1 tests will be marked internally within schools to inform teacher assessment.

Scaled score conversion tables are not included in this document. Conversion tables will be produced as part of the standards maintenance process. Scaled score conversion tables[2] for the 2019 tests will be published in June 2019.

The mark schemes are provided to use when marking pupils' responses. The pupil examples are based on responses gathered from the test trialling process. It is important, when marking, to refer to the general marking principles, the additional guidance and the exemplars section, to ensure marking is accurate and consistent.

# 2. Structure of the test

The key stage 1 mathematics test comprises:

- Paper 1: arithmetic (25 marks)
- Paper 2: reasoning (35 marks).

1 www.gov.uk/government/publications/key-stage-1-mathematics-test-framework
2 www.gov.uk/guidance/scaled-scores-at-key-stage-1

# 3. Content domain coverage

The 2019 test meets the specification in the test framework. Table 1 sets out the areas of the content domain that are assessed in Papers 1 and 2.

The references below are taken from the test framework. A question assessing 2M1, for example, assesses 'compare and order lengths, mass, volume/capacity and record the results using >, < and =' and is taken from the year 2 programme of study.

**Table 1: Content domain coverage for Paper 1 and Paper 2**

| Paper 1: arithmetic | |
|---|---|
| **Question** | **Content domain reference** |
| **1** | 2C1/1C2a |
| **2** | 1N1b |
| **3** | 1C2a/2C1 |
| **4** | 2C6/1N1b |
| **5** | 2C1/2N1 |
| **6** | 2C2b/1N1a |
| **7** | 2C6/1N1b |
| **8** | 1N1a/2C2a |
| **9** | 2C2b/2C2a |
| **10** | 1C4/1C2a |
| **11** | 2N6/2C2b |
| **12** | 2C2b/1N1a |
| **13** | 2C6/1N1b |
| **14** | 2C2b/2C2a |
| **15** | 2N6/2C2b |
| **16** | 2C2b/2C2a |
| **17** | 2C6 |
| **18** | 2C2b |
| **19** | 2C1/1C2b |
| **20** | 2F1a/1F1b |
| **21** | 2F1a |
| **22** | 2C3 |
| **23** | 2F1a |
| **24** | 2C2b |
| **25** | 2C2b |

| Paper 2: reasoning | |
|---|---|
| **Question** | **Content domain reference** |
| **1** | 1M4b/1M4c |
| **2** | 2C6/1N1a |
| **3** | 2F1a/2F2 |
| **4** | 2C8/2C6 |
| **5** | 2N6/2C2a |
| **6** | 2G2a |
| **7** | 1N2b/1C2b |
| **8** | 1C1/2C2a |
| **9** | 2C8 |
| **10** | 1N2a/2N2b |
| **11** | 2F1b/1F1a |
| **12** | 2N1 |
| **13** | 2C1 |
| **14** | 2N4 |
| **15** | 2M9/1M3 |
| **16** | 2G3 |
| **17** | 2M4a/1N1b |
| **18** | 2G2a |
| **19** | 2C4/2C2a |
| **20** | 1P2 |
| **21** | 2N6/2C3 |
| **22** | 2S2b/1N2a |
| **23** | 2C8 |
| **24** | 2C3/2N4 |
| **25** | 2M3a/1M3 |
| **26** | 2C7 |
| **27** | 2S2a |
| **28** | 2N6/2C3 |
| **29** | 2C4 |
| **30** | 2F1a/2C8 |
| **31** | 2C4 |
| **32** | 2C8/2M9 |

# 4. Explanation of the mark schemes

Those marking the tests should familiarise themselves with the marking guidance in section 5 of this document before applying the mark schemes.

The practice questions are not marked as they are completed by the pupils together with the test administrator as an introduction to the test.

The marking information for each question is set out in the form of tables (sections 7 and 8).

The '**Qu.**' column on the left-hand side of each table provides a quick reference to the question number and part.

The '**Requirement**' column may include two types of information:

- a statement of the requirements for the award of each mark, with an indication of whether partial credit can be given for a correct method
- examples of some different types of correct answer.

The '**Mark**' column indicates the total number of marks available for each question part.

The '**Additional guidance**' column indicates alternative acceptable answers, and provides details of specific types of answer that are unacceptable. Other guidance, such as the range of acceptable answers, is provided as necessary.

# 5. General marking guidance

## 5.1 Applying the mark schemes

To ensure consistency of marking, the most frequent procedural queries are listed in Table 2, along with the action you should take. Unless otherwise specified in the mark scheme, you should apply these guidelines in all cases.

Example responses are also included in section 9 for the two working mark questions in Paper 2: reasoning. These should act as your guide when you are marking these questions.

## 5.2 General marking principles

**Table 2: General marking principles**

| Possible issues when marking | |
|---|---|
| **1. The answer does not closely match any of the examples in the mark scheme.** | Those marking the test will use their judgement to decide whether the answer corresponds with details in the 'Requirement' column of the mark scheme. Refer also to the 'Additional guidance' column and to the examples of responses where appropriate. |
| **2. The pupil has answered in a non-standard way.** | Pupils may provide evidence in any form as long as its meaning can be understood. Diagrams, symbols or words are acceptable ways to present an answer. |
| **3. The answer is correct, but the wrong working is shown.** | Always award the mark for a final response that is correct. |
| **4. No answer is provided in the expected place, but the correct answer is given elsewhere.** | Where a word or number response is expected, a pupil may meet the requirement by annotating a graph or labelling a diagram elsewhere in the question. |
| **5. The correct answer has been crossed (or rubbed) out and not replaced.** | You should not award any marks for crossed out answers or working. |
| **6. The answer in the answer box is wrong, but the correct answer is shown in the working.** | Give precedence to the response provided in the answer box over any other workings. However, in a 2-mark question, one mark may still be awarded for evidence of a complete, correct method or a partial step, as indicated in the 'Requirement' column. |

| Possible issues when marking | |
|---|---|
| **7. More than one answer is given.** | If all provided answers are correct (or a range of answers is given, all of which are correct), a mark will be awarded unless the mark scheme states otherwise. If both correct and incorrect responses are given, no mark will be awarded unless the mark scheme states otherwise. |
| **8. There appears to be a misread of numbers that affects the pupil's working.** | A misread occurs when a pupil misreads a number given in the question and consistently uses a different number that does not alter the original intention or difficulty of the question. For example, if 43 is misread as 48, both numbers may be regarded as comparable in difficulty. However, if 43 is misread as 40 or 45, the misread number may be regarded as making the question easier, depending on the question. For example, 26 + 40 is easier than 26 + 48. The misread of a number will affect the award of marks.<br><br>No marks are awarded if there is more than one misread in a question or if the mathematics is simplified by the misread.<br><br>For **1-mark** questions: no mark is awarded for one or more misreads.<br><br>For **2-mark** questions that have a method mark: one mark is awarded if the correct method is correctly implemented with the misread number, provided this does not simplify the mathematics. |
| **9. The answer is numerically equivalent to the answer in the mark scheme.** | Answers should be given as single values in their simplest form unless the mark scheme states otherwise, e.g. for □ = 12 – 5, the answer 4 + 3 will not be accepted. Where alternative expressions are acceptable, these will be indicated in the additional guidance column. |
| **10. The pupil reverses a digit in their answer.** | A reversed digit is acceptable if it is clearly recognisable as the digit intended. For example, a reversed 2 must clearly show the characteristics of a 2 rather than a 5.<br><br>As a further example, where the answer is 61 and the response ∂1 is given, then this should be awarded the mark.<br><br>You should make a decision based upon your knowledge of the pupil's writing. |

| Possible issues when marking | |
|---|---|
| **11. The pupil transposes digits in their answer.** | A pupil transposes digits by reversing their order, for example, 83 instead of 38.<br><br>For questions where no working is shown, an answer with transposed digits should not be awarded the mark. For example, a response of 16 or 1∂ when the answer is 61 should not be marked as correct. |
| **12. The pupil has worked out the answer correctly, but then copied the wrong answer into the answer box.** | A transcription error can occur when the pupil miscopies the correct answer from the end of their working into the answer box.<br><br>Give precedence to the answer given in the answer box over any other workings. There may be cases where the incorrect answer is a transcription error, in which case you may check the pupil's intention and decide whether to award the mark(s). |
| **13. The answer correctly follows through from earlier incorrect work.** | 'Follow through' marks for an answer may only be awarded when specifically stated in the mark scheme. |

# 6. Internal moderation procedures

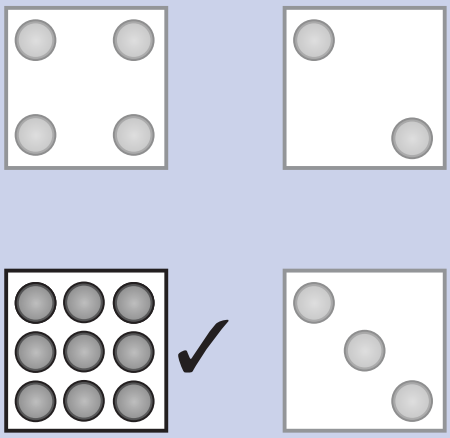
We recommend those who are involved in marking the key stage 1 tests undertake moderation activity to ensure marking is consistent across their school.

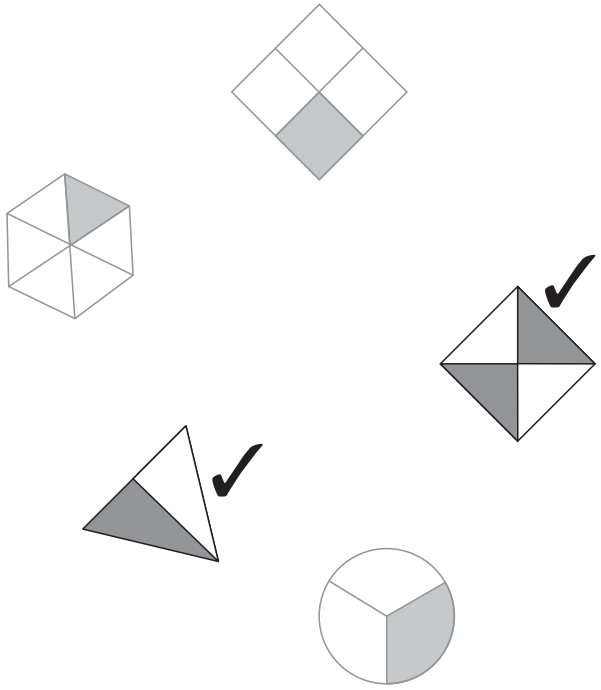
# 7. Mark schemes for Paper 1: arithmetic

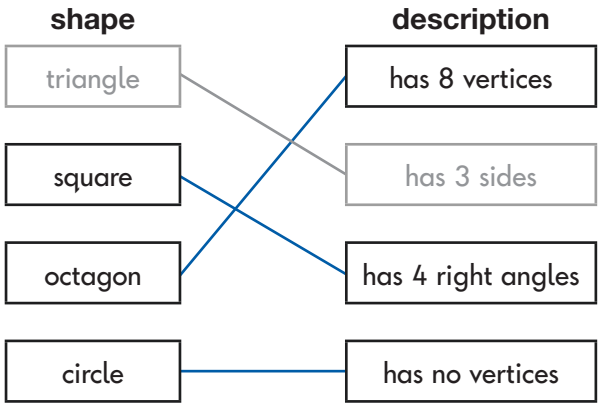
Equivalent answers are **not** acceptable, for example, 10 + 4 instead of 14. When marking the arithmetic questions, refer specifically to general marking principles 9, 10, 11 and 12. No misreads are allowed for 1-mark questions.

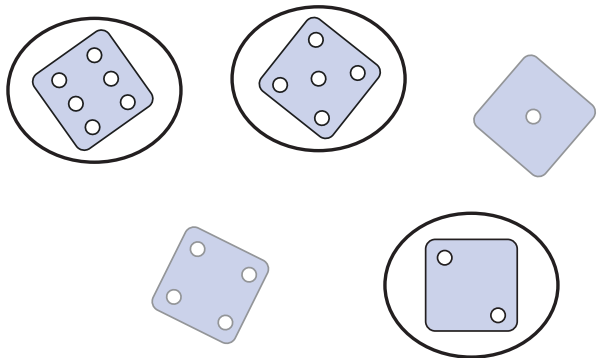
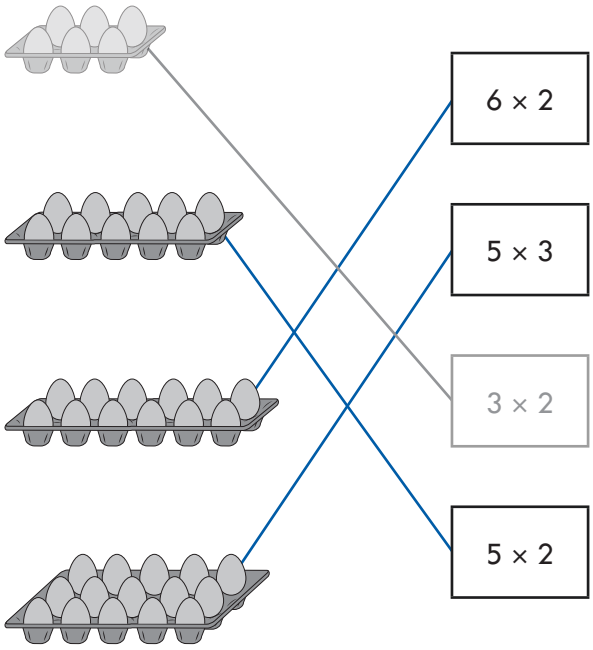
| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| **P** | 7 | **none** | Practice question |
| **1** | 6 | **1m** | |
| **2** | 20 | **1m** | |
| **3** | 12 | **1m** | |
| **4** | 100 | **1m** | |
| **5** | 70 | **1m** | |
| **6** | 37 | **1m** | |
| **7** | 30 | **1m** | |
| **8** | 102 | **1m** | |
| **9** | 44 | **1m** | |
| **10** | 4 | **1m** | |
| **11** | 88 | **1m** | |
| **12** | 91 | **1m** | |
| **13** | 7 | **1m** | |
| **14** | 53 | **1m** | |
| **15** | 19 | **1m** | |
| **16** | 46 | **1m** | |
| **17** | 4 | **1m** | |
| **18** | 60 | **1m** | |
| **19** | 14 | **1m** | |
| **20** | 2 | **1m** | |
| **21** | 45 | **1m** | |
| **22** | 48 | **1m** | |
| **23** | 18 | **1m** | |
| **24** | 8 | **1m** | |
| **25** | 54 | **1m** | |

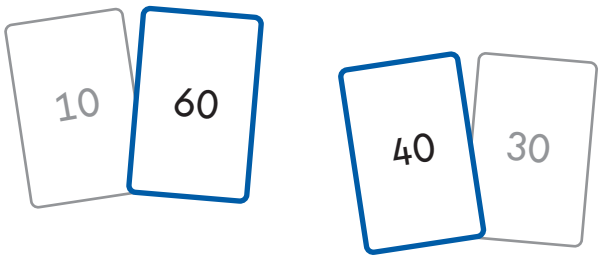
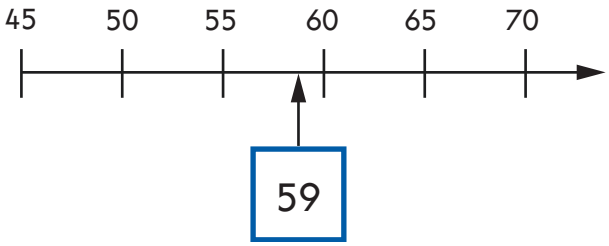
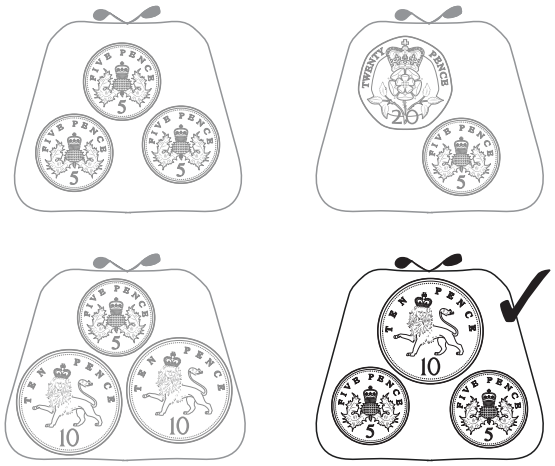
# 8. Mark schemes for Paper 2: reasoning

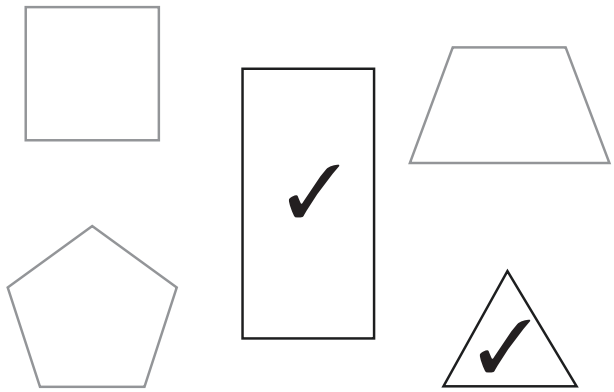
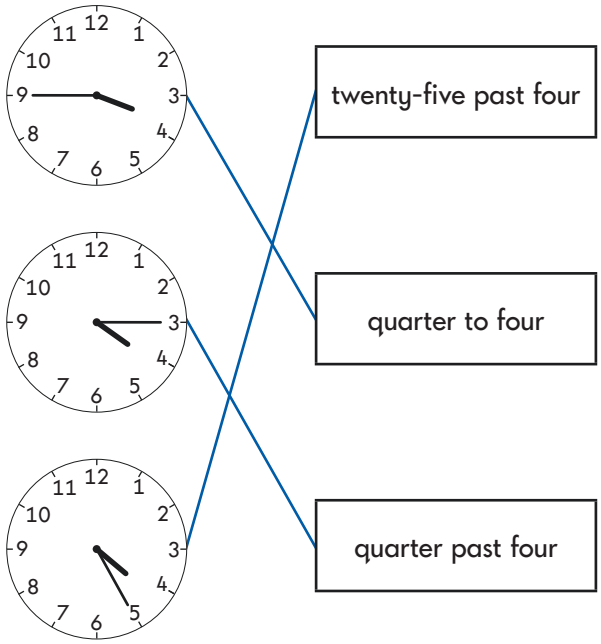
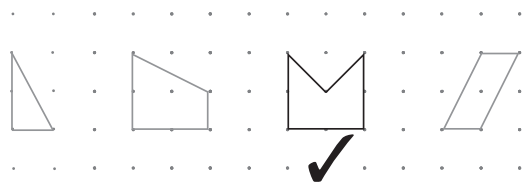
| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| | **Aural questions** | | |
| **P** | The correct box ticked as shown:<br>  | **none** | Practice question |
| **1** | Correct day (Wednesday) ticked as shown:<br>Monday<br>Friday<br>Wednesday ✓<br>Saturday | **1m** | Accept any other clear way of indicating the correct answer.<br>**Do not** award the mark if additional days are indicated, unless it is clear that the correct day is the pupil's final choice. |
| **2** | 54 **or** 56 | **1m** | Accept if both 54 and 56 are given.<br>**Do not** award the mark if additional numbers are given.<br>(Refer to general marking principles 10 and 11 on pages 7 and 8.) |

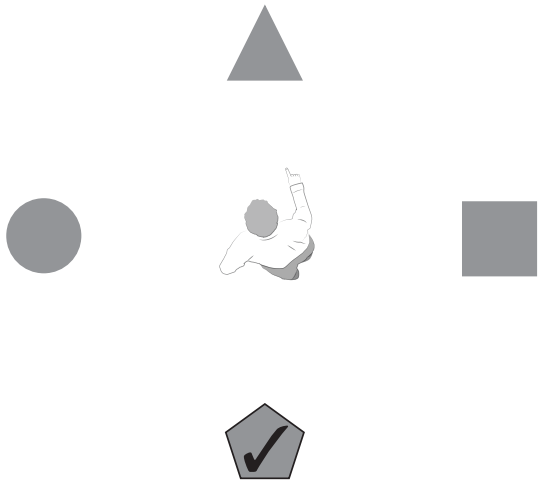
| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 3 | Two correct shapes ticked as shown:<br>  | 1m | Both correct shapes must be indicated for the award of the mark.<br><br>Accept any other clear way of indicating the two correct shapes.<br><br>**Do not** award the mark if additional shapes are indicated, unless it is clear that the two correct shapes are the pupil's final choice. |
| 4 | 2 | 1m | |
| 5 | 86 | 1m | |

| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| | **Written questions** | | |
| 6 |  | 1m | All three shapes must be correctly matched for the award of the mark.<br>**Do not** award the mark if a shape is matched to more than one description.<br>Ignore any extra lines drawn from 'triangle'. |
| 7 | All three signs written correctly as shown:<br>4 + 1 = 5<br>23 − 1 = 22<br>40 − 1 = 39<br>19 + 1 = 20 | 1m | All three signs must be correct for the award of the mark.<br>Accept slight inaccuracies in the drawing of the signs, as long as the intention is clear.<br>(Refer to general marking principle 2 on page 6.) |

| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 8 | Three correct dice circled as shown:<br>  | 1m | All three correct dice must be indicated for the award of the mark.<br><br>Accept any other clear way of indicating the correct answer, e.g. ticking the three correct dice.<br><br>**Do not** award the mark if more than three dice are circled, unless it is clear that the correct dice are the pupil's final choice. |
| 9 |  | 1m | All three egg boxes must be correctly matched for the award of the mark.<br><br>**Do not** award the mark if an egg box is matched to more than one calculation.<br><br>Ignore any extra lines drawn from the first egg box. |
| 10 | Both 3 **AND** 6 given, in any order. | 1m | Both numbers must be given for the award of the mark.<br><br>(Refer to general marking principle 4 on page 6.) |
| 11 | 6 written in the box as shown:<br>$\frac{1}{2}$ of 6 = 3 | 1m | |
| 12 | Number sequence completed as shown:<br>16 14 12 10 8 6 | 1m | All three numbers must be correct and in the order shown for the award of the mark. |

| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 13 | Number pairs completed as shown:<br>  | 1m | Both numbers must be correct for the award of the mark.<br><br>(Refer to general marking principles 10 and 11 on pages 7 and 8.) |
| 14 | 59 written in the box as shown:<br>  | 1m | Accept any number in the range $57\frac{1}{2}$ – 60 **exclusive**.<br><br>**Do not** accept $57\frac{1}{2}$ or 60<br><br>(Refer to general marking principles 4, 10 and 11 on pages 6–8.) |
| 15 | Correct purse indicated as shown:<br>  | 1m | Accept any other clear way of indicating the correct answer.<br><br>**Do not** award the mark if more than one purse has been indicated, unless it is clear that the correct purse is the pupil's final choice. |

| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 16 | Two correct shapes indicated as shown:<br>  | 1m | Both correct shapes must be indicated for the award of the mark.<br><br>Accept any other clear way of indicating the correct answer.<br><br>**Do not** award the mark if additional shapes are indicated, unless it is clear that the correct shapes are the pupil's final choice. |
| 17 |  | 1m | All three clocks must be correctly matched for the award of the mark.<br><br>**Do not** award the mark if a clock face is matched to more than one time. |
| 18 | Correct shape indicated as shown:<br>  | 1m | Accept any other clear way of indicating the correct answer.<br><br>**Do not** award the mark if additional shapes are indicated, unless it is clear that the correct shape is the pupil's final choice. |
| 19 | Number sentence given in the following order as shown:<br><br>5 + 6 + 7 = 18 | 1m | All four numbers in the number sentence must be correct and in the order shown for the award of the mark. |

| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 20 | Correct shape indicated as shown:<br>  | 1m | Accept any other clear way of indicating the correct answer.<br><br>**Do not** award the mark if additional shapes are indicated, unless it is clear that the correct shape is the pupil's final choice. |
| 21 | Award **TWO** marks for three number sentences completed correctly, i.e.<br><br>27 + 40 = 67<br><br>54 − 20 = 34<br><br>10 + 88 = 98<br><br>Award **ONE** mark for any two number sentences completed correctly. | 2m<br><br>1m | Accept any other clear way of indicating the correct answers, e.g. matching correct cards to answer boxes.<br><br>(Refer to general marking principles 10 and 11 on pages 7 and 8.) |
| 22 | 3 (children) | 1m | |
| 23 | 35 (marbles) | 1m | **Do not** accept 5 × 7 or 7 × 5 unless evaluated.<br><br>(Refer to general marking principles 9, 10 and 11 on pages 7 and 8.) |
| 24 | 6 (points) | 1m | |

| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 25 | The following five coins given in any order:<br><br>10p, 10p, 10p, 5p, 2p<br><br>**OR**<br><br>20p, 10p, 5p, 1p, 1p<br><br>**OR**<br><br>20p, 5p, 5p, 5p, 2p | 1m | All **five** coins must be correct for the award of the mark.<br><br>Numbers may be written in any order.<br><br>**Do not** award the mark if additional incorrect numbers are given as part of the answer. |
| 26 | Number sentence completed correctly as shown:<br><br>30 ÷ 3 = 10 | 1m | All three numbers must be correct for the award of the mark.<br><br>**Do not** accept 30 ÷ 10 = 3 |
| 27 | Correct children indicated as shown:<br><br>**Ben** (circled)<br>Kemi<br>Ajay<br>**Sita** (circled) | 1m | Accept any other clear way of indicating the correct answer, e.g. the two names only indicated on the pictogram and not in the expected place.<br><br>(Refer to general marking principle 4 on page 6.)<br><br>**Do not** award the mark if any additional names are indicated unless it is clear that the correct names are the pupil's final choice. |
| 28 | Number sentence completed correctly as shown:<br><br>16 + 13 = 29 | 1m | Both numbers must be correct for the award of the mark. |

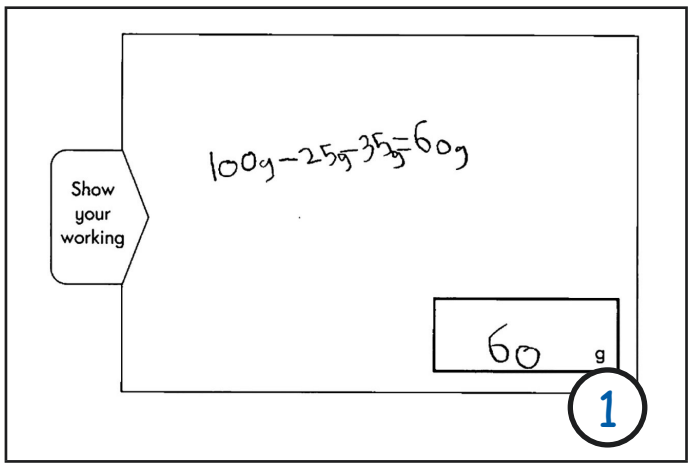
| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| **29** | Award **TWO** marks for the correct answer of 40 (g).<br><br>If the answer is incorrect or missing, award **ONE** mark for evidence of a complete, correct method, e.g.<br>• 100 – 25 – 35 = (incorrect or no answer)<br>• 25 + 35 = 70 (error)<br>100 – 70 =<br>**OR**<br>Any of these partial methods correctly evaluated, i.e.<br>• 100 – 25 = 75<br>• 100 – 35 = 65<br>• 25 + 35 = 60<br>**OR**<br>• Sight of 75, 65 or 60 | **2m**<br><br>**1m** | (Refer to general marking principle 6 on page 6.)<br><br>(Use the example responses given on pages 20 and 21 to help you determine how many marks can be awarded.) |
| **30** | 3 (bags) | **1m** | Accept 3 bags indicated on the image as long as it is clear that this is the pupil's final intended answer. |
| **31** | 26 (beads) | **1m** | |

| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 32 | Award **TWO** marks for the correct answer of 20 (p). | **2m** | (Refer to general marking principle 6 on page 6.) |
| | If the answer is incorrect or missing, award **ONE** mark for evidence of a complete, correct method, e.g.<br>• 90 – 35 – 35 = (incorrect or no answer)<br>**OR**<br>• 90 – 2 × 35 =<br>**OR**<br>• 90 – 35 = 54 (error)<br>54 – 35 =<br>• 90 – 70 = (incorrect or no answer)<br>• 35 × 2 = 60 (error)<br>90 – 60 =<br>**OR**<br>Any of these partial methods correctly evaluated, i.e.<br>• 35 + 35 = 70<br>• 35 × 2 = 70<br>• 90 – 35 = 55<br>**OR**<br>• Sight of 70 or 55 | **1m** | (Use the example responses given on pages 22–23 to help you determine how many marks can be awarded.) |

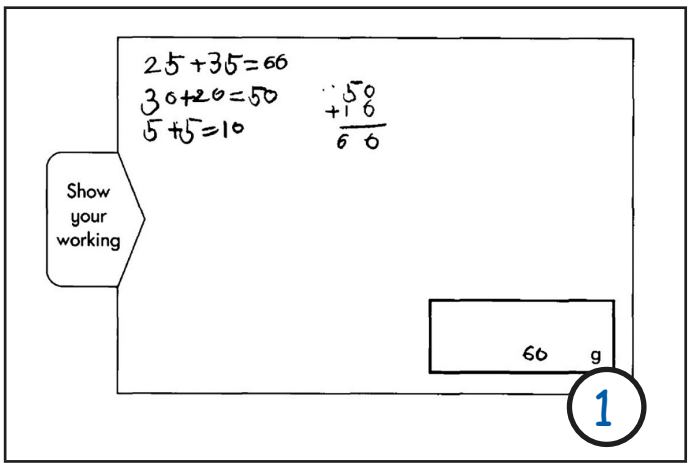
# 9. Example responses

## 9.1 Examples of responses from question 29

**Sasha: 1 mark**




**Hassan: 1 mark**

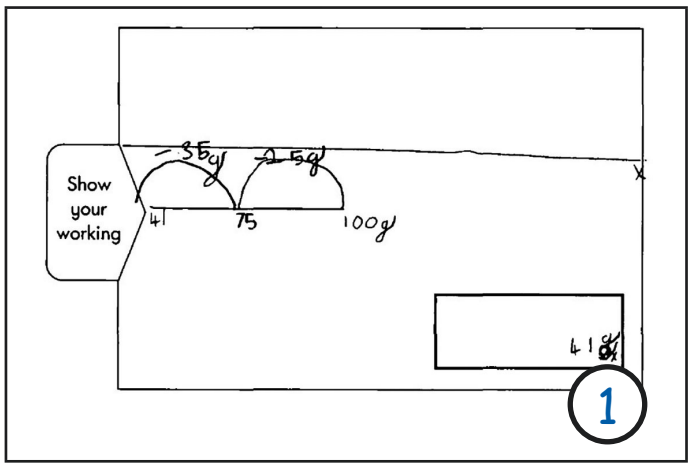



Sasha and Hassan have recorded the same incorrect answer in the answer box.

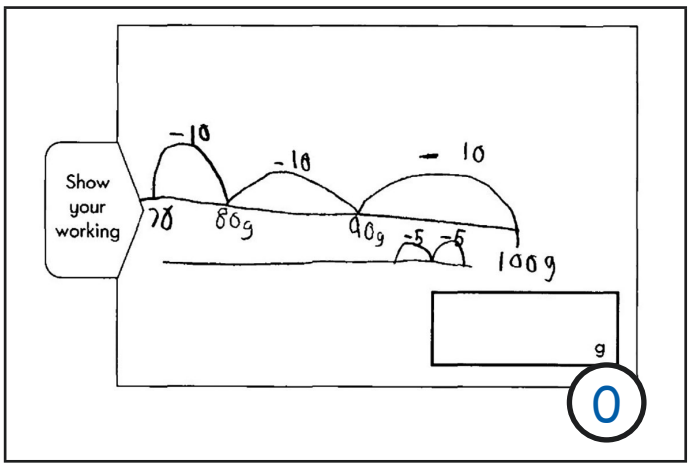
In her working, Sasha has shown a complete, correct method with an arithmetic error. Although her final answer is incorrect, she is awarded **one mark** for the complete, correct method.

Hassan, in comparison, has only provided a partial method. He has correctly added Sita's and Ben's chocolate chips, but has not subtracted that total from 100. Although his method is not complete, he is awarded **one mark** for a partial method correctly evaluated.

**Alex: 1 mark**




**Joanna: 0 marks**



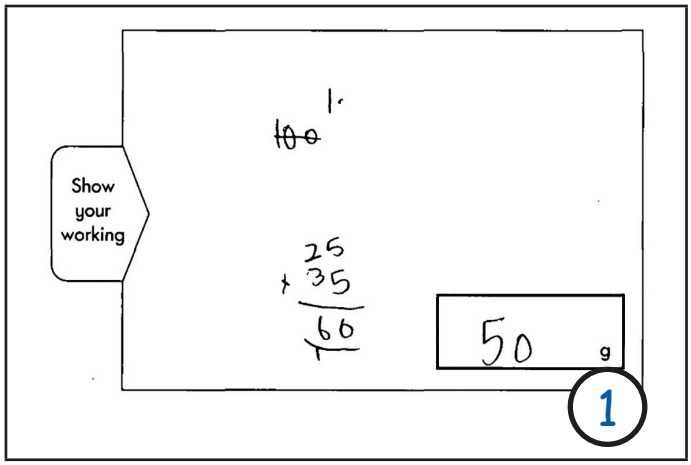

Alex and Joanna have both used a number line as part of their method.

In his method, Alex first subtracts 25g from 100g to get 75g. He then attempts to subtract 35g from 75g and makes an arithmetic error. Although he has given an incorrect final answer, he can be awarded **one mark** for a complete, correct method.

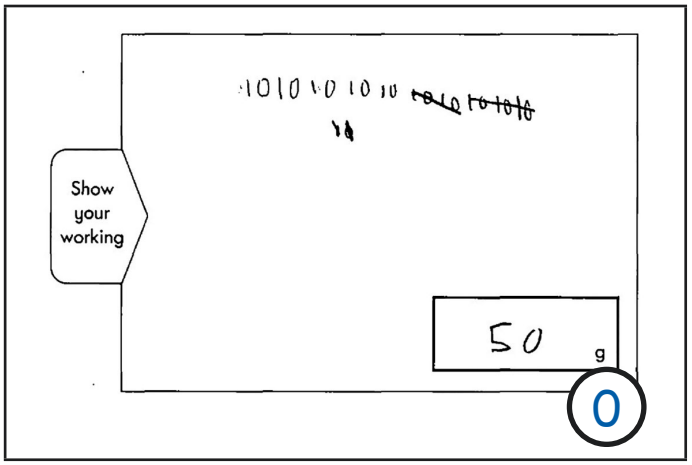
In contrast, Joanna's method cannot be considered complete or correct as there is no indication that she is subtracting either Ben's or Sita's chocolate chips, so **no marks** are awarded.

## 9.1 Examples of responses from question 29 (continued)

**Katie: 1 mark**




**Luke: 0 marks**

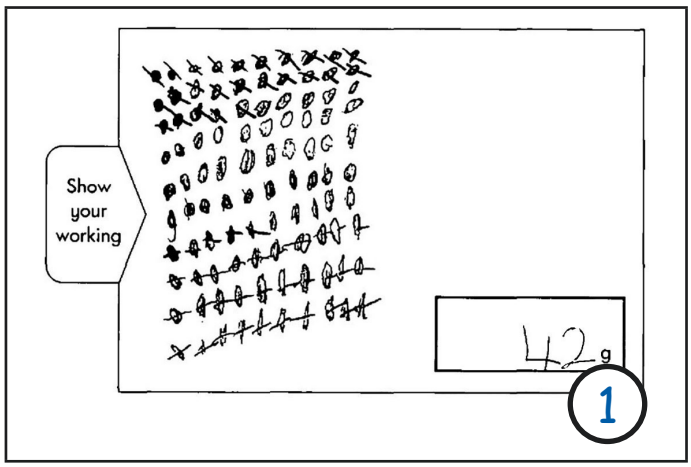



Katie and Luke have both recorded an incorrect answer of 50 in the answer box.

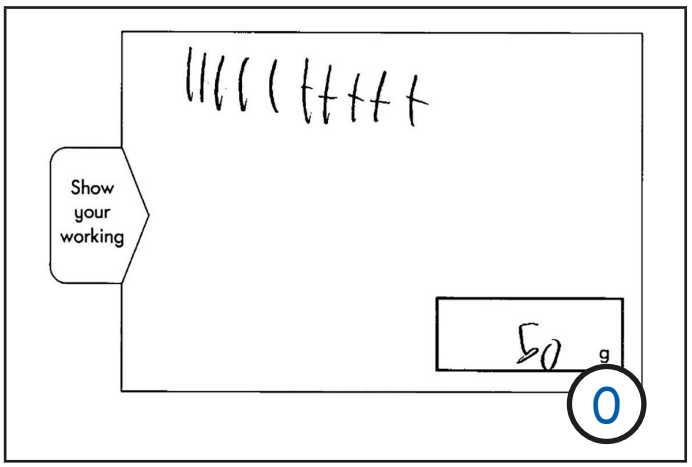
In her working, Katie has shown a partial step of correctly evaluating the sum of 25 and 35 and is awarded **one mark** for sight of 60.

Luke's working, in contrast, shows no evidence of a correctly evaluated partial step or a complete correct method and therefore is awarded **no marks**.

**Priya: 1 mark**




**Jude: 0 marks**



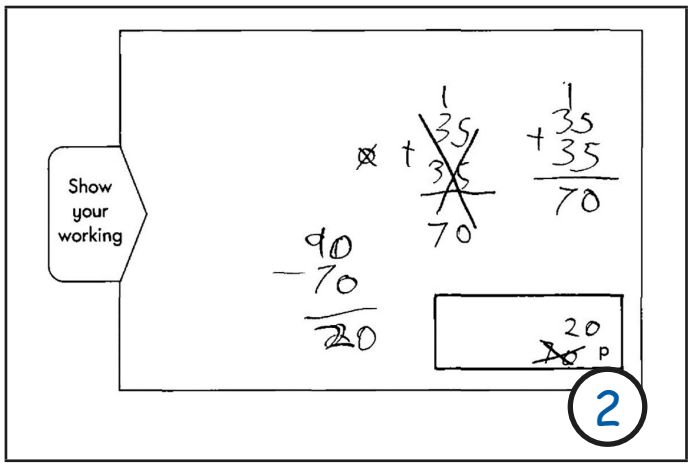

Both Priya and Jude have used a pictorial method to obtain an answer.

Priya has correctly drawn 100 chocolate chips, and crossed out 25 chocolate chips from one end and 35 from the other. However, she miscounts her remaining chocolate chips, giving her an incorrect answer of 42. She is awarded **one mark** for a complete, correct method.

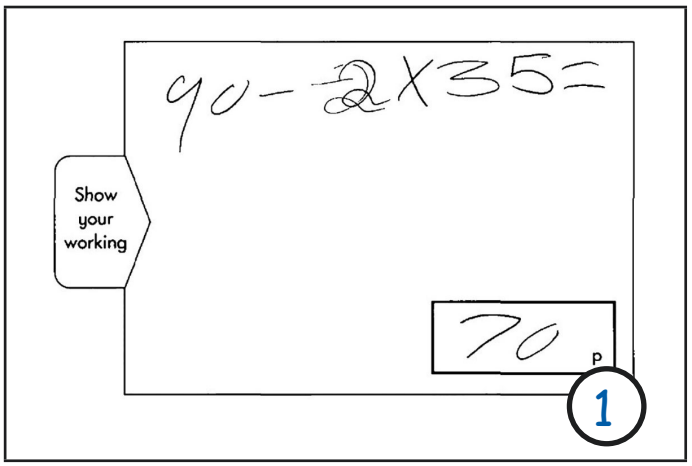
Although Jude has correctly recorded 10 marks representing 100 chocolate chips, he has only subtracted 50 chocolate chips and not 60. His method is therefore not correct and he is awarded **no marks**.

## 9.2 Examples of responses from question 32

**Nathan: 2 marks**




**Staci: 1 mark**

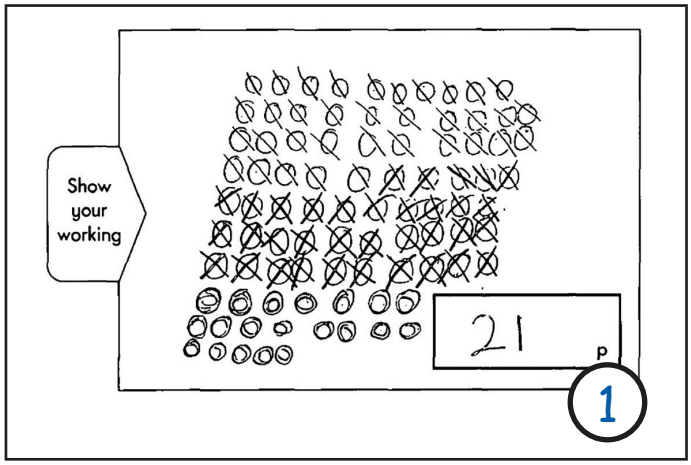



In their methods, both Nathan and Staci have provided methods with their final answers.

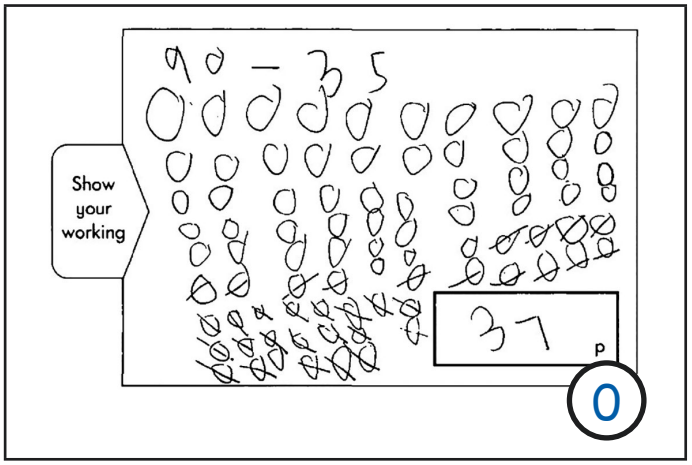
Nathan initially wrote 70(p) as his final answer but he crossed that response out and replaced it with the correct answer of 20(p). Therefore, he is awarded **two marks** for the correct answer.

Staci, in her method, multiplied 35 by 2 to obtain 70 and shows the intention to subtract that answer from 90. Although her final answer is incorrect, Staci is awarded **one mark** for showing a complete, correct method.

**Lauren: 1 mark**




**Jason: 0 marks**



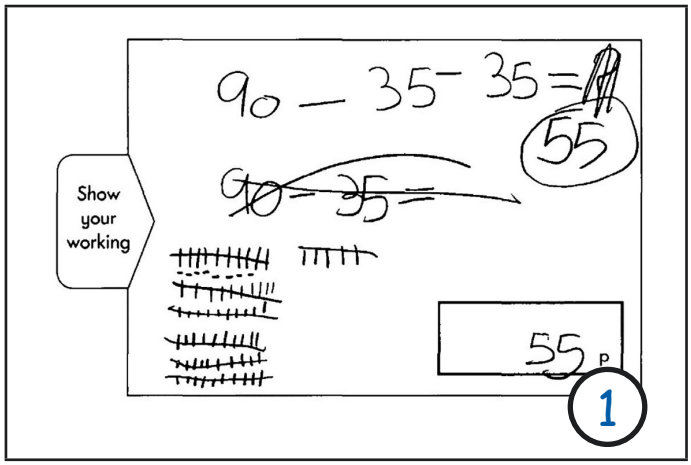

Lauren and Jason have both provided an incorrect answer but have used pictorial methods.

Lauren has drawn 90 circles to represent 90p and even though she crossed off 70 circles, she then miscounted resulting in an error in her final answer. She is awarded **one mark** for a complete correct method.

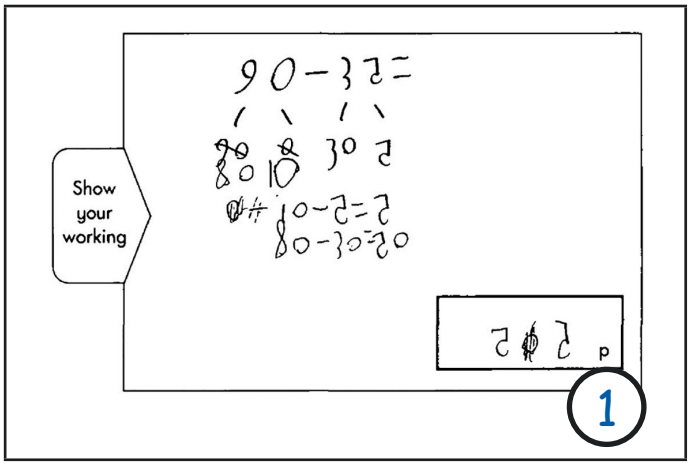
In contrast, Jason has not drawn 90 circles and although he has crossed off 35 of these, he cannot be awarded a mark for a correctly evaluated partial method as he has not written down 55 (or 70) either in his working or as his final answer. Therefore, he is awarded **no marks**.

## 9.2 Examples of responses from question 32 (continued)

**Parker: 1 mark**




**Gwen: 1 mark**

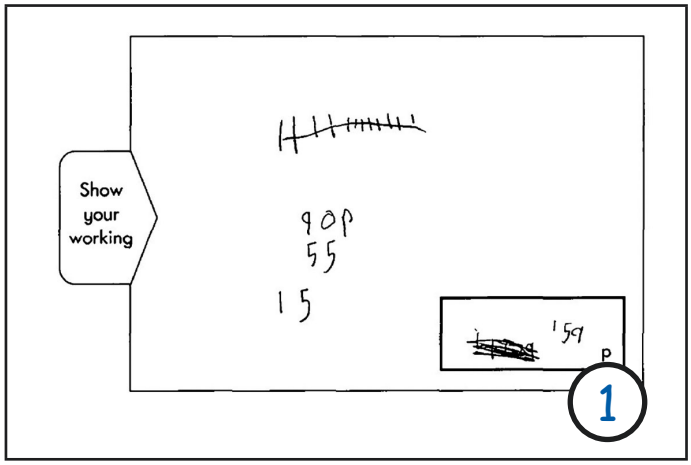



Parker and Gwen have both provided the same incorrect final answer and have included their methods.

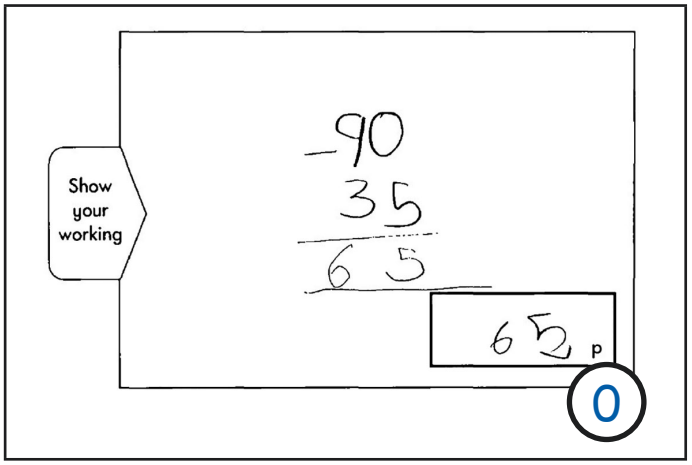
Although Parker has only evaluated the first step, he has shown a complete and correct method, therefore he is awarded **one mark**.

Gwen has only shown her method for the first step, which she has correctly evaluated using partitioning. Although her method is not complete, she is awarded **one mark** for a correctly evaluated partial method.

**Sandeep: 1 mark**




**Bethany: 0 marks**




Sandeep and Bethany have both given incorrect final answers with a partial method.

Sandeep has not recorded all aspects of his method and has arrived at the incorrect answer of 15(p). There is no written evidence of a complete, correct method. However, he is awarded **one mark** for sight of 55 in his working as this implies that he has correctly evaluated a partial method (90 – 35).

Bethany has shown a correct partial method of 35 subtracted from 90. However, as she has not correctly evaluated this step, she is awarded **no marks**.

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